

REMARKS

Claims 3, 4 and 6-15 are pending. No new matter has been added by way of the present submission. The recitations in claims 3 and 4 are supported by the specification at page 4, lines 9-11, the examples, and page 10, Table 1. Accordingly, no new matter has been added.

In view of the following remarks, the Examiner is respectfully requested to withdraw all rejections and allow the currently pending claims.

Issues under 35 U.S.C. § 103(a)

1) The Examiner has rejected claims 3-4 and 6-15 under 35 U.S.C. § 103(a) as being obvious over JP 2001-233661A (hereinafter referred to as JP '661) in view of Lin, U.S. Patent 5,518,980 (hereinafter referred to as Lin '980).

2) The Examiner has also rejected claims 3-4 and 6-15 under 35 U.S.C. § 103(a) as being obvious over Kikuchi et al., U.S. Patent 4,650,523 (hereinafter referred to as Kikuchi '523) in view of Lin '980.

3) Lastly, the Examiner has rejected claims 3-4 and 6-15 under 35 U.S.C. § 103(a) as being obvious over Simeonov et al., U.S. Patent 4,205,998 (hereinafter referred to as Simeonov '998) in view of Lin '980.

Applicants respectfully traverse these rejections.

The Present Invention and its Advantages

Independent claim 3 relates to a cement composition comprising 100 parts by weight of a cement and 0.05 to 10 parts by weight of calcium hydroxide particles having an average particle

diameter of 3  $\mu\text{m}$  or less as a cement setting accelerator for shortening the initial and final setting times of said cement composition.

Independent claim 4 is directed to a process for manufacturing a cement composition comprising adding a water slurry of calcium hydroxide particles having an average particle diameter of 3  $\mu\text{m}$  or less as a cement setting accelerator for shortening the initial and final setting times of said cement composition to a cement.

Due to the fact that the cement composition of claim 3 comprises very fine calcium hydroxide particles (average particle diameter of 3  $\mu\text{m}$  or less), unexpectedly superior results are obtained by the present invention. For instance, a remarkable effect of significantly shortening the setting times is obtained (see page 4, lines 9-11 and page 10, Table 1 of the present specification) by the present invention. More specifically, as is evident from a comparison between Examples 1-3 and Comparative Examples 2-5 of Table 1, when the particle diameter of the calcium hydroxide particles in use is larger than 3  $\mu\text{m}$ , the initial and final setting times become quite long.

Enclosed herewith is a 37 CFR § 1.132 Declaration of Hiroyoshi Kato, one of the present inventors. The Examiner is respectfully requested to review the enclosed Declaration of Hiroyoshi Kato as it provides strong evidence of patentability of the present invention.

In the enclosed Declaration, Hiroyoshi Kato states:

It is understood that the initial and final setting times of Runs 1, 2 and 3 in which calcium hydroxide having an average particle diameter of 3  $\mu\text{m}$  or less was used are much shorter than those of Comparative Runs 2 to 5 in which calcium hydroxide having an average particle diameter of more than 3  $\mu\text{m}$  was used.

Especially, it is noted that the initial and final setting times of Comparative Runs 2, 3 and 4 in which calcium hydroxide having an average particle diameter of 6.5  $\mu\text{m}$ , 23.5  $\mu\text{m}$  and 62.0  $\mu\text{m}$  were used are almost the same as that of Comparative Run 1 in which calcium hydroxide was not used. It can be said that when calcium hydroxide does not have a very small average particle diameter, it does not show the effect of shorting the setting times.

Runs 1-3 and Comparative Runs 1-5 in the enclosed Declaration correspond to Examples 1-3 and Comparative Examples 1-5 in the present specification, respectively.

Distinctions between the Present Invention and JP '661 in view of Lin '980

JP '661 discloses a dry cement concrete including a hydroxide, such as calcium hydroxide, in an amount of 0.3 – 1% mass per 100% mass of cement.

However, JP '661 fails to disclose the particle diameter of the calcium hydroxide in use.

Lin '980 teaches a calcium hydroxide slurry having an average primary particle size of about 0.05 to about 5.0  $\mu\text{m}$  (see column 5, lines 39-14). However, the calcium hydroxide is used as a sulfur oxide (SO<sub>x</sub>)-reducing agent in the composition of Lin '980 (see column 4, lines 59-61). Further, Lin '980 fails to disclose that calcium hydroxide having an average particle size of about 0.05 to about 5.0  $\mu\text{m}$  should or could serve as a cement setting accelerator.

Further, even if these references are combined together, a point not conceded, they still fail to suggest the present invention achieving excellent setting properties, as described above and in the enclosed Declaration, by using calcium hydroxide having an average particle diameter of 3  $\mu\text{m}$  or less. Such results are completely unexpected and thus render any hypothetical *prima facie* case of obviousness moot.

The Examiner asserts that these unexpected results are not commensurate in scope with the claims as Applicants are arguing properties that are not claimed. In response, Applicants

have amended claims 3-4 to recite that the “cement setting accelerator [is] for shortening the initial and final setting times of said cement composition.” As such, the above arguments are now commensurate in scope with the claims as Applicants are arguing properties that are claimed.

Therefore, claims 3-4 and 6-15 of the present application are not obvious over JP ‘661 in view of Lin ‘980.

Distinctions between the Present Invention and Kikuchi ‘523 in view of Lin ‘980

Kikuchi ‘523 teaches a cement accelerating element comprising calcined alunite, a carbonate and lime. However, Kikuchi ‘523 fails to disclose or suggest the particle size of the lime. The Examiner again attempts to cure this deficiency with Lin ‘980. However, reliance upon Lin ‘980 is similarly improper as discussed above with respect to the combination of JP ‘661 and Lin ‘980. This rejection is likewise improper and should be withdrawn since there exists no *prima facie* case of obviousness and unexpectedly superior properties exist.

Distinctions between the Present Invention and Simeonov ‘998 in view of Lin ‘980

Simeonov ‘998 discloses a cement accelerating agent comprising calcium oxide in the form of hydrated lime. The mixture is added to a cement composition. However, similar to the above two references of JP ‘661 and Kikuchi ‘523, Simeonov ‘998 fails to disclose or suggest the particle size of the calcium hydroxide. The Examiner again attempts to rely on Lin ‘980. However, such a combination is improper for the same reasons discussed above. This rejection is thus likewise improper and should be withdrawn.

Unexpected Superior Results

Applicants have shown above that there exist no *prima facie* cases of obviousness based upon any of JP '661, Kikuchi '523, Simeonov '998, or Lin '980, regardless of the combination. Applicants now stress that even if the Examiner has hypothetically presented valid *prima facie* cases of obviousness, a point not conceded, the present invention still achieves unexpectedly superior results compared with the prior art. As discussed above with reference to the present Examples and Comparative Examples as well as the enclosed Declaration, it is evident that the present invention achieves superior setting times for examples 1-3 compared to comparative examples 2-5 as shown in Table 1 at page 10 of the specification and Table A at page 2 of the enclosed Declaration. Such results are unexpected. Thus, any hypothetical *prima facie* case of obviousness is moot.

Issues under 35 U.S.C. § 112, second paragraph

The Examiner has rejected claims 10 and 15 under 35 U.S.C. § 112, second paragraph, as being indefinite. Specifically, the Examiner asserts that the phrase "wherein any calcium aluminate present in said cement" is vague and lacks proper antecedent basis.

Applicants have deleted this phrase from claims 10 and 15. As such, Applicants respectfully submit that the outstanding rejection has been overcome and that the rejection be removed.

**CONCLUSION**


In view of the above, Applicants respectfully submit that the present claims are in condition for allowance. The Examiner is thus requested to withdraw all rejections and allow the currently pending claims.

If the Examiner has any questions or comments, please contact Craig A. McRobbie, Reg. No. 42,874 at the offices of Birch, Stewart, Kolasch & Birch, LLP at the number provided below.

If necessary, the Commissioner is hereby authorized in this, concurrent, and future replies, to charge payment or credit any overpayment to our Deposit Account No. 02-2448 for any additional fees required under 37 C.F.R. § 1.16 or under § 1.17; particularly, extension of time fees.

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Respectfully submitted,

↓ By  42-874  
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Marc S. Weiner  
Registration No.: 32,181  
BIRCH, STEWART, KOLASCH & BIRCH, LLP  
8110 Gatehouse Road  
Suite 100 East  
P.O. Box 747  
Falls Church, Virginia 22040-0747  
(703) 205-8000  
Attorney for Applicants

Attachment: Declaration 1.132